

WHAT IS CLAIMED IS:

1. An antifungal peptide having from seven to twelve amino acids comprising:

5 (a) a core sequence of amino acids selected from the group consisting of LIQL, IQLF, WLIQL, LIQLF and WLIQLF; and

(b) one or more cationic amino acids selected from the group consisting of K, R, H, ornithine and diaminobutyric acid at the amino and/or carboxy terminal portion of the core sequence.

10

2. An antifungal peptide having from seven to nine amino acids comprising:

(a) a core sequence of amino acids selected from the group consisting of LIQL and IQLF; and

15 (b) at least two cationic amino acids selected from the group consisting of K, R, H, ornithine and diaminobutyric acid at the amino and/or carboxy terminal portion of the core sequence.

3. An antifungal peptide having from eight to ten amino acids comprising:

20 (a) a core sequence of amino acids selected from the group consisting of LIQLF and WLIQLF; and

(b) at least two cationic amino acids selected from the group consisting of K, R, H, ornithine and diaminobutyric acid at the amino and/or carboxy
25 terminal portion of the core sequence.

4. An antifungal peptide having from nine to twelve amino acids comprising:

(a) a core sequence of amino acids selected from the group consisting of
30 WLIQLF; and

(b) at least three cationic amino acids selected from the group consisting of K, R, H, ornithine and diaminobutyric acid at the amino and/or carboxy terminal portion of the core sequence.

5 5. An antifungal peptide according to claim 1, 2, 3 or 4 selected from the group consisting of the peptides of SEQ ID NOS: 118-137 (XMP.285-304), 140-144 (XMP.307-311), 155-160 (XMP.322-327), 166-170 (XMP.335-339), 174-177 (XMP.343-346), 179-184 (XMP.348-353), 186 (XMP.355) and 188-190 (XMP.357-359).

10

6. An antifungal peptide according to claim 1, 2, 3 or 4 having one or more D-isomer amino acids.

7. An antifungal peptide according to claim 6 selected from the group
15 consisting of the peptides of SEQ ID NOS: 164 (XMP.333), 165 (XMP.334), 173 (XMP.342), 194 (XMP.363) and 196 (XMP.365).

8. An antifungal peptide according to claim 6 wherein said core sequence amino acids comprise D-isomer amino acids in reverse sequence order.

20

9. An antifungal peptide according to claim 8 having the amino acid sequence set out in SEQ ID NOS: 163 (XMP.332) and 198 (XMP.367).

10. An antifungal peptide according to claim 1, 2, 3 or 4 wherein the
25 amino terminal amino acid residue is acetylated.

11. An antifungal peptide according to claim 10 selected from the group consisting of the peptides of SEQ ID NOS: 162 (XMP.331), 185 (XMP.354), 187 (XMP.356), 195 (XMP.364), 199 (XMP.368) and 204 (XMP.373).

30

12. A cyclic antifungal peptide according to claim 1, 3 or 4.

13. A cyclic antifungal peptide according to claim 3 selected from the group consisting of SEQ ID NOS: 191-193 (XMP.360-362).

5

14. An antifungal peptide selected from the group consisting of peptides of SEQ ID NOS: 1 (XMP.5), 2-4 (XMP.11-13), 5 (XMP.29), 20 (XMP.55), 56 (XMP.137), 79 (XMP.235), 111-115 (XMP.271-275), 117 (XMP.284), 132 (XMP.299), 138-139 (XMP.305-306), 145-154 (XMP.312-321), 200-203 (XMP.369-372), BPI residues 145-159 and 149-163 of SEQ ID NO: 206 and 171-172 (XMP.340-341).

10

15. A pharmaceutical composition comprising an antifungal peptide according to any of claims 1 through 14 and a pharmaceutically acceptable diluent, adjuvant or carrier.

15

16. An *in vitro* method for killing or inhibiting replication of fungi comprising contacting the fungi with an antifungal peptide according to any one of claims 1 through 14.

20

17. A method of treating fungal infections comprising administering to a subject suffering from a fungal infection a therapeutically effective amount of a peptide according to any of claims 1 through 14.

25

18. A method according to claim 17 wherein the fungal infection involves a fungal species selected from the group consisting of *Candida*, *Aspergillus* and *Cryptococcus* species.

19. A method according to claim 18 wherein the *Candida* species is selected from the group consisting of *C. albicans*, *C. glabrata*, *C. krusei*, *C. lusitaniae*, *C. parapsilosis* and *C. tropicalis*.

5 20. A method according to claim 18 wherein the peptide is administered topically, intravenously, orally or as an aerosol.

21. A method according to claim 17 comprising the additional step of administering a non-peptide anti-fungal agent.

Patent 2010/0000000